SUMMARY OF THE U.S. NUCLEAR REGULATORY COMMISSION / U.S. DEPARTMENT OF ENERGY QUARTERLY MANAGEMENT MEETING LAS VEGAS, NEVADA June 6, 2006

Introduction

The U.S. Nuclear Regulatory Commission (NRC) and U.S. Department of Energy (DOE) held a public Quarterly Management Meeting on June 6, 2006. The meeting was held at the NRC's Atomic Safety and Licensing Board hearing facility in Las Vegas, Nevada, with video connections at the NRC Headquarters in Rockville, Maryland, the Center for Nuclear Waste Regulatory Analyses in San Antonio, Texas, and the DOE offices in Las Vegas. Teleconference connections were also made available to interested stakeholders. The agenda for this meeting can be found in Attachment 1. Participants included representatives of the NRC, DOE, the State of Nevada, Affected Units of Local Government, Nuclear Energy Institute, other industry representatives, the press, and interested members of the public. Attachment 2 contains the list of attendees present at the above noted locations.

The purpose of this meeting was to discuss the overall progress of the Yucca Mountain Project (Project) at the proposed geologic repository site at Yucca Mountain, Nevada. The discussions focused on an update of the NRC high-level waste program, the DOE high-level waste program, and the Project activities. The status of the action items from the past meetings and new action items resulted from this meeting were also discussed.

Opening Remarks

Mr. Jack Strosnider, Director of NRC's Office of Nuclear Material Safety and Safeguards, welcomed DOE staff, members of the public, and all other stakeholders in attendance at the Quarterly Management Meeting, either in person or conferencing. Mr. Strosnider said that he was looking forward to a very productive meeting.

NRC Program Update

Mr. Strosnider stated that he had provided an update on revisions to NRC regulations regarding the compliance period in Environmental Protection Agency's (EPA) standard for Yucca Mountain at the March 2006 Quarterly Management Meeting and that it EPA's goal to complete a final revised standard for Yucca Mountain by the end of the calendar year. On September 8, 2005, NRC proposed to change its regulations on Yucca Mountain to be consistent with EPA changes. The proposed amendments included adopting EPA's recently proposed revisions to its standards for radiation doses that could occur between 10,000 years up to one million years after waste disposal. The public comment period on the proposed NRC regulations ended December 7, 2005. The NRC

staff will recommend final regulations to the Commission for adoption shortly after EPA finalizes its revised Yucca Mountain standards.

Regarding DOE's Transportation, Aging, and Disposal (TAD) canister design activities, Mr. Strosnider mentioned that NRC would be very interested in the status of TAD design, the status of the Critical Decision-1 (CD-1) process, and the impact that CD-1 will have on the development of DOE's licensing schedule. As he did in the March 2006 Quarterly Management Meeting, Mr. Strosnider emphasized that it is very important for DOE to actively engage the NRC staff to address technical and regulatory issues relevant to DOE's developing a high-quality license application (LA)

Mr. Strosnider discussed the DOE Integrated Requirements Product Team (IRPT) which has been charged with implementing actions to improve design control and requirements management processes. During the March 2006 Quarterly Management Meeting, NRC staff observed that implementation of the IRPT actions appears to be slowing down due in part to available resources. Mr. Strosnider requested information be provided during today's meeting on how DOE is assuring that the necessary management priority and resources to implement and complete the actions required in the design control and requirements management area are applied.

Mr. Strosnider stated that NRC staff understands that DOE has identified Sandia National Laboratories (SNL) as DOE's lead laboratory for conducting scientific activities for Project. As this is a vital aspect of the development of the DOE LA, NRC hopes during the meeting to learn DOE's plans, process, and schedule for making this transition, and the roles, responsibilities, and relationships of Bechtel SAIC Company, LLC, SNL, U.S. Geological Survey (USGS), and the others. Also important are the actions DOE will take to ensure that SNL develops and implements an effective quality assurance program that meets all applicable requirements.

Mr. Strosnider requested that during the meeting DOE described the status of its activities regarding the USGS Infiltration Model and SNL's work being done in that same area. NRC also wants to understand what steps have been taken to resolve the outstanding issues regarding infiltration and DOE's plans and schedule to complete the necessary actions. While recently released reports indicate that there was no impact on the Project technical basis from the issues raised by the USGS e-mails, and that the U. S. Attorney's Office declined to pursue criminal prosecution based on investigation findings from the DOE and Department of Interior Inspectors General, he requested an update on the extent of condition analysis of the USGS e-mail issue, DOE's follow up to the recommendations in the Government Accountability Office (GAO) report, and what DOE is doing to address the overall issue of adherence to Quality Assurance (QA) requirements uncovered by the review of the USGS e-mails.

Mr. Strosnider emphasized that the Project is very important to the NRC. DOE and its contractors, subcontractors, USGS, and the national labs have a great deal of important work to do. It is critical that adequate and qualified resources be applied to these work

activities, and that these work activities be controlled in order to ensure that DOE submits a high-quality LA to NRC.

Mr. Bill Reamer, NRC's Director of the Division of High-Level Waste Repository Safety, stated that NRC continues to believe it is important for DOE to understand the level of design detail necessary to adequately demonstrate safety at the proposed geologic repository at Yucca Mountain. On May 16-17, 2006, NRC and DOE held a Technical Exchange on Pre-Closure Safety Analysis and supporting information for the proposed Yucca Mountain high-level waste repository. The exchange also covered the reliability of structures, systems, and components in pre-closure safety analysis and 10 CFR Part 63 pre-closure safety analysis regulatory requirements and was attended by the State of Nevada, other stake holders, and interested members of the public. It is DOE's responsibility to develop an accurate understanding of the level of detail that needs to be included in a LA for pre-closure engineering design. NRC and DOE scheduled a Technical Exchange for June 7, 2006, on "Pre-Closure Seismic Design Methodology and Performance Demonstration." NRC continues to urge DOE to identify areas under NRC regulations where DOE is not clear on the level of detail of information that will be needed and other areas where DOE wants to obtain the regulatory perspective and to schedule Technical Exchanges to ensure that issues are identified and resolved early.

Mr. Reamer mentioned that, on May 22, 2006, NRC staff issued a draft Interim Staff Guidance, HLWRS-ISG-01, "Review Methodology for Seismically Initiated Event Sequences," for public comment (71 FR 29369). This guidance supplements the Yucca Mountain Review Plan, NUREG-1804, Revision 2, for review of seismically initiated event sequences in the pre-closure safety analysis of the proposed Yucca Mountain geologic repository. The guidance provides a methodology to demonstrate compliance with Part 63 risk-informed, performance-based regulations, considering the site-specific hazard and performance reliability of structures, systems, and components, important to safety. It is consistent with the NRC's philosophy of using risk-informed, performance-based, technology-neutral criteria for licensing of new nuclear power plants, and takes advantage of improvements in probabilistic seismic hazard analyses and performance-based safety assessments. The NRC staff is currently planning to develop interim staff guidance on a variety of other technical issues, such as Pre-Closure Safety Analysis and Reliability, to enhance what is already contained in the Yucca Mountain Review Plan.

On May 1-5, 2006, NRC staff observed the DOE audit of the QA program implementation at the Lawrence Livermore National Laboratory (LLNL). Mr. Reamer stated the observers noted that the audit was conducted effectively and the Audit Observation Report is currently being developed. NRC staff is planning on observing additional DOE audits that are scheduled to be conducted in the near future. NRC is aware that DOE has completed a self-assessment of your corrective action program and an analysis to determine the causes of the corrective action program effectiveness issues. NRC is interested to hear during the meeting the status of DOE actions, findings, and conclusions in this area. During the meeting, NRC would appreciate an update on the status of DOE's improvements to its corrective action program and NRC requests that

DOE discuss its corrective action program in detail at the next Quarterly Management Meeting in September 2006.

Mr. Reamer stated that, in January 2006, NRC issued an Observation Audit Report regarding its observation of a BSC audit in August 2005. The BSC audit team assessed the effectiveness and implementation of the quality assurance program requirements applicable to scientific investigations supporting the waste package and drip shield degradation models. The NRC observers identified several issues regarding the BSC audit team's conclusions. In its January 9, 2006, letter NRC requested a response to the Audit Observation Inquiries identified in our Observation Audit Report. During the meeting NRC staff is interested in hearing any information DOE has to present on this topic.

DOE Program Update

Mr. Paul Golan, Acting Office of Civilian Radioactive Waste Management (OCRWM) Director, noted that Mr. Ward Sproat has been confirmed by the Senate to be the Director of OCRWM. Mr. Sproat will join DOE on June 19. Mr. Golan discussed the new OCRWM organization that became effective May 8, 2006. The flat organization consists of thirteen direct reports to the OCRWM Director in three areas of Project, Waste, and Support. The project consists of five offices of Chief Scientist, Chief Engineer, Regulatory Authority, Infrastructure Management, and Yucca Mountain Site Operation.

Mr. Golan stated that Acting Director of Quality Assurance, is a direct report to the Director's office, along with the managers for the OCRWM employee concerns program and Safety Conscious Work Environment. Mr. Golan reiterated that QA is an important function and quality is a line management responsibility. The GAO issued a report on DOE's quality assurance program, and identified a number of areas that required improvement. DOE is evaluating what actually caused the problems, their root causes, and will follow through with corrective actions.

On the subject of calibration issue associated with a Vaisala probe that was an issue during the BSC QA audit of LLNL in August, 2005, Mr. Golan remarked that DOE has done a thorough review of the concerns and expects to issue an independent report soon. In addition, DOE will respond to NRC's Audit Observer Inquiries from this audit and plans to discuss the findings and corrective actions at a separate technical exchange or during the next Quarterly Management Meeting.

With respect to the Fiscal Year 2007 budget submittal, in addition to $544.5M, which is consistent with DOE's request, the House also provided $30M for DOE to move forward with interim storage of spent nuclear fuel.

DOE received design concepts for the clean canister approach from BSC and an alternative design concept for utilizing canisters from the Management and Technical Support Services (MTS) contractor. The new design would eliminate the large footprint of the dry handling facilities of an earlier design concept, and focus on smaller facilities,

using proven techniques. The facility would receive canistered waste, which would go through the aging facility, canister packaging facility, and emplacement in waste package for disposal. After the design has been incorporated into the technical baseline, DOE intends to announce the licensing schedule.

In July 2006, after completion of a review by an independent group, DOE expects to publish the extent of condition report initiated to evaluate the issue with USGS emails on infiltration modeling. DOE offered a Technical Exchange on the review.

Mr. Golan discussed the planned transition to a lead laboratory and noted that DOE is in process of transitioning scientific work to SNL during this fiscal year. DOE will be responsible for the organization and coordination of all scientific work. Mr. Golan added that in March 2006, DOE extended its contract with BSC and is working on terms and conditions to extend this contract through March 2008.

Licensing Update

Mr. Mark Williams, Director, Regulatory Authority Office, discussed several topics including the Preclosure Safety Analysis (PCSA) and Supporting Information Technical Exchange, the Preclosure Seismic Safety Basis Technical Exchange, design control, status of the response to NRC's Observation Audit Report of January 9, 2006, status of Key Technical Issue (KTI) Agreement Items and Additional Information Needs (AINs), and Future Interactions (see Attachment 1).

With respect to design control, NRC had requested a commitment by DOE that the design control process specified in the QARD will be followed for the design selected from the CD-1 process. DOE initiated a design review to ensure the appropriate processes and procedures are in place to implement design control; the design review was completed in May and concluded that design control procedures are in place. In addition, two vertical slice reviews found no significant issues in the procedures. DOE stated that prior to approval of quality-affecting design and PCSA work, design control will be implemented. DOE plans to use performance-based assessments to confirm implementation of the design control process.

Mr. Jack Strosnider (NRC) noted that NRC is interested in the number of KTI's that may be impacted by transport, aging and disposable (TAD) canisters and other programmatic changes and asked if DOE has reached a conclusion as to how many KTIs are impacted by these changes. In response, Mr. Williams provided NRC with a list of closed KTI agreements that may be impacted by the TAD. Mr. Reamer (NRC) commented that NRC is interested in any impacts to KTI agreements from changes to the program (TAD, peak dose, and infiltration work in response to USGS issue). Mr. Williams responded that the list was for TAD, however, the Department will continue to evaluate impacts potential to completed KTI agreements. Mr. Strosnider noted that this is an important area for NRC planning and appreciates as much information as DOE can provide as early as possible.

Mr. Lawrence Kokajko (NRC) encouraged DOE to schedule a technical exchange as soon as possible on the Total System Performance Assessment (TSPA) and related

topics. For the Science and Technology Program, he noted that NRC is interested in outputs and outcomes that may impact or be incorporated into the LA. In response to a question on the timing of availability of the TAD Performance Specification from Mr. Reamer, Mr. Williams responded that DOE expects that the information may be available in July; DOE would then schedule a Technical Exchange to discuss TAD performance.

Science Update

Dr. Russ Dyer (DOE) presented an update on lead laboratory transition and Science and Technology (S&T) program activities. Dr. Dyer noted that in January 18, 2006, DOE announced the selection of SNL as the lead laboratory for scientific work. In this role, SNL will also provide management and integration services. Transition activities are expected to be complete by September 30, 2006.

DOE has issued a *Postclosure Work Scope Transition Management Plan* to describe the process that will be used to manage and execute transition activities. DOE recognizes that this change in management responsibilities will require that certain portions of OCRWM work scope be transferred, parallel management structures be developed, and interface structures be established to ensure timely and complete transfer of information between the post-closure, design, and regulatory parts of the program.

DOE expects that SNL will establish the necessary operational infrastructure to manage, execute, and integrate their post-closure work scope, including a QA program that conforms to DOE's QARD and all applicable requirements. DOE plans to conduct a readiness review of SNL's critical support systems (including the QA program) when these systems are in place, probably later this summer.

Dr. Dyer noted that more than half of the FY'06 budget for the S&T Program (total funding is $21.3 M) is devoted to advanced technologies ($13 M), with the remainder allocated among the three other targeted thrusts ($2.5 M each) including source term, material performance, and natural barriers "thrust areas."

NRC had several questions and concerns regarding the relationship between the S&T Program and the DOE's regulatory program and the quality assurance implications. Mr. Reamer (NRC) commented that there is a distinction between the licensing program and the regulatory program and clearly the developmental results will find their way into the licensing process. Dr. Dyer responded that some information from the S&T Program may ultimately find its way into licensing as is the case for traditional Research and Development programs. Some work may have the potential for significant large benefits for improving the program, such as the possible application of amorphous metal. NRC asked what controls DOE has in place to ensure the quality of the data from the S&T program is such that the data could be used in licensing process. Dr. Dyer responded that any data from the S&T program that is relied on in licensing would have an appropriate QA pedigree. However, at the current time, the S&T program is not part of DOE's

baseline. Any data which contradicts information used in the licensing baseline would be evaluated for impacts no matter what the source.

Design and Engineering Update

Mr. Paul Harrington, Acting Director, Office of the Chief Engineer, discussed status of Design and Engineering activities related to CD-1 and requirements management and design control (see Attachment 1). Mr. Harrington noted that CD-1 documentation was submitted to the DOE's ESAAB to implement the canister-based approach. An authorization letter is anticipated, which will provide formal concurrence with the revised approach. In addition, a baseline change proposal is under development to implement the change, pending receipt of the authorization letter. Mr. Harrington stated that DOE will provide conceptual design and Preclosure Safety Analysis (PCSA) information on this revised approach to the NRC in a future Technical Exchange. This information will be further developed to satisfy the requirements for submittal of a LA.

Quality Assurance

Mr. Michael Ulshafer, Acting Director, Office of Quality Assurance, noted that the new Revision 17 of the Quality Assurance Requirements and Description (QARD) supporting the OCRWM reorganization has been issued, approved, and became effective on May 8, 2006. Former QARD Revision 17, reviewed and accepted by the NRC in 2005, is now Revision 18 and has been approved with an effective date of October, 2006. Revision 18 is now baselined to 10CFR63.142 and NUREG-1804. Both new Revisions 17 and 18 will be forwarded to the NRC by mid-summer 2006.

Next, Mr. Ulshafer provided a status of completed and planned audits and surveillances including audits of Los Alamos National Laboratory/SNL/Lawrence Berkeley National Laboratory and joint EM/OQA audits. With regards to OQA staffing, Mr. Ulshafer stated that OQA will continue to maintain staffing necessary to perform all of its responsibilities in the QARD. When fully staffed, the OQA will consist of two teams with 13 persons in Quality Assessments and 10 persons in Quality Systems and Engineering.

In response to questions from Mr. Latta regarding scheduled audits of SNL's quality QA program and BSC's Quality Management Directive (QMD), Mr. Ulshafer noted that DOE OQA will perform a review of their QA document within the next 30 to 60 days and DOE OQA will be part of the readiness review team. Regarding plans and schedule for audit of BSC's quality management document, DOE OQA has been in the process of reviewing the document and has worked through nearly all comments and resolutions. DOE is on track to have the document effective on October 2, 2006, along with the QARD. An audit will be performed to look at implementation in terms of accepting QMD documents to meet the QARD.

Corrective Action Program Update

Mr. John Arthur, Yucca Mountain Site Operations Office, noted that several reviews have recently been conducted on the OCRWM Corrective Action Program. Also, in response to both the OCRWM Self Assessment and the GAO report, a number of improvements to the Corrective Action Program are in process. These include:

- Monthly review of recurring conditions by DOE Senior Management to increase DOE's oversight through use of the Corrective Action Program;
- Consolidation of DOE and BSC trend procedures to ensure trending is done on both an organizational and program-wide basis;
- Reorganization of the Corrective Action Screening Team to ensure the appropriate management level is engaged on a daily basis to evaluate and categorize issues.

In addition, the Management Review Committee (MRC) was reorganized to increase line accountability for corrective actions. For example the DOE Director of Yucca Mountain Site Operations Office is now the MRC Chair and the Directors of the Regulatory Authority Office, Office of the Chief Engineer, Office of the Chief Scientist, and Infrastructure Management Office are MRC members. The MRC serves a dual purpose by taking actions necessary for the oversight of the Corrective Action Program and by addressing crosscutting management issues.

A root cause team led by the DOE that was chartered in July 2005 has completed evaluation of the Extent of Condition, compilation of preliminary draft report, and submittal of preliminary draft report for external review by root cause subject matter experts. The Root Cause team is now preparing a draft for internal review by DOE and BSC Senior Management.

Mr. Jack Parrott (NRC) asked how DOE anticipates CAP to be implemented for SNL. Mr. Arthur responded that DOE will have one integrated CAP system and SNL will be using the same system that BSC and DOE are using.

Action Item Status

DOE and NRC agreed to keep open four previous action items and four new action items were identified. Status of action items is summarized in the attached table.

Public Comments

Judy Treichel, Nevada Nuclear Waste Task Force, asked about application of amorphous metal sprayed on waste packages, pallets, alloy C-22, and drip shields and whether the use of amorphous metal spray precludes the use of C-22. In response, DOE stated that although potentially amorphous metal spray could replace or be used in conjunction with C-22 carbon steel, DOE is not currently planning to use amorphous metals on any component. Studies for amorphous metal application are now in early investigative work. Before any decision, the concept will have to go through configuration control process.

Ms. Treichel further commented that the differences between the Performance Conformation and S&T programs were not clear. DOE noted that Performance Confirmation is a distinct program required by regulation and therefore is not directly related to the S&T program.

Mr. Steve Frishman, State of Nevada, asked if the wet transfer facility is adequate for uncanistered fuel as well as canistered fuel. DOE responded that the wet fuel facility will be small, but the facilities will be able to handle all waste uncanistered and fuel in the TAD canisters.

Closing Remarks

Mr. Strosnider commented on topics discussed during the meeting. Regarding the calibration issue associated with a Vaisala probe that was identified during the BSC QA audit of LLNL in August, 2005, and regarding the USGS email issues, technical exchanges should be scheduled after NRC has an opportunity to review DOE's reports to discuss DOE's findings, extent of condition, root causes determination, conclusions, and any proposed actions. Other technical exchanges should be scheduled to discuss: (1) DOE's transition plan to SNL as DOE's lead laboratory with a focus on SNL's work on Total System Performance Assessment; (2) how DOE will manage Office of Science and Technology program activities and how DOE will provide NRC staff visibility into those activities; and (3) TAD after NRC staff reviews DOE's performance specifications.

Regarding the issue on requirements flowdown and design control, NRC has not yet received DOE's response to NRC's January 6, 2006, letter asking DOE to clarify that DOE will follow the design control process specified in the QARD during the CD-1 down-select process. Mr. Strosnider urged DOE to provide that commitment to NRC because DOE is currently performing quality-affecting design work. Mr. Strosnider also emphasized the need for DOE to identify the KTIs that may be impacted by the TAD canister and other programmatic changes.

Mr. Strosnider mentioned that NRC staff will have to review the proposed Revision 18 to the QARD to determine if a formal acceptance of that document will be required. Mr. Strosnider commented that the recent quality assurance program description is good and that NRC has seen improvement in the QARD.

Regarding DOE's corrective action program, Mr. Strosnider indicated that DOE's self-assessment appears to be good but that follow-through in implementing program improvements to achieve sustainability is necessary.

Lastly, Mr. Strosnider emphasized that quality and safety is essential in all activities contributing to the development of DOE's license application.

Mr. Golan noted that DOE is working hard on improving the quality of the organization, communications, and accountability for the program including a successful lead

laboratory transition to SNL. DOE will share the LA schedule with NRC when it is finalized.

Date: 7/25/06

William Reamer, Director
Div. of High Level Waste Repository Safety
Office of Nuclear Material Safety
and Safeguards
U.S. Nuclear Regulatory Commission

Date: 7/17/06

Mark H. Williams, Director
Regulatory Authority Office
Office of Civilian Radioactive Waste
Management
U.S. Department of Energy

Consolidated Action Items
From the NRC/DOE Quarterly Management Meetings
(June 06, 2005)

Item No.	Action Item	Description	Status
1	MM 0402-C1	DOE will identify any to-be-verified (TBV) data in the LA that needs to be qualified (if any) at the time of LA submittal (Commitment).	Open. This item will remain open until LA submittal.
2	MM 0506-01	DOE and NRC to determine the dates for the list of proposed technical interactions discussed during the June 6, 2005 Management Meeting.	Open. This item will remain open as a continuing action and progress will be reported at future management meetings.
3	MM 0509-01	DOE/NRC to hold technical exchange after the DOE report addressing the USGS alleged falsification of documents has been released by the Secretary.	Open. The report has been issued and a technical exchange will be scheduled when DOE's evaluation is complete (including the root cause, extent of condition, and action plan).
4	MM 0512-01	DOE to provide to NRC a schedule for submittal of planned additional information needs for the remaining key technical issues under review by the NRC.	Open.
5	MM0606-01	DOE and NRC to hold an interaction (management meeting or technical exchange - technical exchange preferred) on DOE's response to NRC's audit observation report (January 9, 2006) regarding the BSC's LLNL report.	Open.
6	MM0606-02	DOE to provide NRC with the performance specifications for the Transport, Aging, and Disposal canister prior to scheduling a technical exchange on the TAD approach.	Open.
7	MM0606-03	NRC reiterated their request for a technical exchange on TSPA. The technical exchange will also include a discussion of DOE's transition plan for impacted workscope to Sandia National Laboratories.	Open.
8	MM0606-04	DOE and NRC to schedule a technical exchange on Science and Technology Program including a discussion of the set of controls that are in place to ensure appropriate development and integration of results from Science and Technology Program into baseline program.	Open.

Note: The Quarterly Management Meeting action items are designated as "MM yymm-nn" where yy is the two digit year, mm is a two digit month and nn is a two digit action item number from that meeting.